AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A transistor comprising:

[[-]] ~~with~~ an emitter; ~~(1),~~

a collector; ~~(2),~~ and

a base layer having a base contact ~~(3)~~, [[-]] ~~wherein the emitter (1) extends into the base layer (3),~~ [[-]] ~~wherein~~ the base layer ~~(3) has~~ comprising:

an intrinsic region ~~(4) arranged~~ between the emitter ~~(1)~~ and the collector; ~~(2), and~~

an extrinsic region ~~(6) that runs~~ between the intrinsic region ~~(4)~~ and ~~a~~ the base contact; and ~~(5),~~

[[-]] ~~wherein the base layer (3) contains~~ a first doping layer ~~(7)~~ that is doped with a trivalent ~~doping~~ substance, ~~which~~ that extends into the extrinsic region, ~~(6)~~ and ~~which~~ that is counter-doped ~~by means of~~ with a pentavalent ~~counter-doping~~ substance ~~(8)~~ in ~~the~~ a region ~~of~~ adjacent to the emitter ~~(1)~~.

2. (Currently Amended) ~~A~~ The transistor ~~according to~~ of claim 1, wherein the trivalent ~~doping~~ substance ~~is~~ comprises boron.

3. (Currently Amended) ~~A~~ The transistor ~~according to one of the preceding claims~~ of claim 1, [[-]] wherein the base layer further comprises:

~~two additional~~ a second doping layer ~~layers (9, 10)~~ that is doped with a trivalent ~~doping~~ substance, and that is ~~are arranged~~ between the first doping layer ~~(7)~~ and the collector; and ~~(2),~~

a third doping layer that is doped with a trivalent substance, and that is between the second doping layer and the collector;

[[-]] ~~and~~ wherein ~~the doping substance~~ a concentration ~~(C2)~~ of trivalent substance in the second doping layer ~~(9) arranged between the first doping layer (7) and the third doping layer (10)~~ is less than ~~the doping substance~~ a concentration ~~(C1)~~ of trivalent substance in the first doping layer, ~~(7)~~ and the concentration of trivalent substance in the second doping layer is less than ~~the doping substance~~ a concentration ~~(C3)~~ of trivalent substance in the third doping layer ~~(10)~~.

4. (Currently Amended) ~~A~~ The transistor of claim 1 ~~according to one of the preceding claims~~, [[-]] wherein the first doping layer ~~(7) has a proportion of~~ comprises at least 30% of ~~the~~ a total amount of a doping substance ~~of~~ in the base layer ~~(3)~~.

5. (Currently Amended) ~~A~~ The transistor of claim 1 ~~according to one of the preceding claims~~, wherein the base layer further comprises:

a ~~counter-doping~~ substance ~~(8) is~~ diffused into the base layer ~~(3)~~ from ~~an emitter~~ a region ~~(11)~~ that corresponds to the collector ~~borders on the base layer (3)~~.

6. (Currently Amended) ~~A~~ The transistor of claim 1 ~~according to one of the preceding claims~~, wherein the base layer comprises carbon atoms having ~~are built into the base layer at~~ a concentration [[>]] greater than 1×10^{18} cm^{-3}.

7. (New) The transistor of claim 3, wherein the first doping layer comprises at least 30% of a total amount of a doping substance in the base layer.

8. (New) The transistor of claim 3, wherein the base layer further comprises:

a substance diffused into the base layer from a region that corresponds to the collector.

9. (New) The transistor of claim 3, wherein the base layer comprises carbon atoms having a concentration greater than 1×10^{18} cm^{-3}.

10. (New) The transistor of claim 3, wherein the trivalent substance comprises boron.

11. (New) The transistor of claim 3, wherein the second doping layer and the third doping layer are doped with germanium;

12. (New) The transistor of claim 11, wherein:

a concentration of germanium in the second doping layer and the third doping layer decreases from a high point at the collector to a low point in the second layer; and

a decrease in the concentration of germanium from the high point to the low point is substantially constant.

13. (New) A transistor comprising:

a base layer comprising:

a first doping layer that is doped with a trivalent substance;

a second doping layer adjacent to the first doping layer and having a lower concentration of the trivalent substance than the first doping layer; and

a third doping layer adjacent to the second doping layer and having a higher concentration of the trivalent substance than the second doping layer;

wherein the first doping layer and the second doping layer are counter-doped with a pentavalent substance in an emitter region of the transistor.

14. (New) The transistor of claim 13, wherein the second doping layer and the third doping layer are doped with germanium.

15. (New) The transistor of claim 14, wherein a concentration of germanium in the second doping layer and the third doping layer decreases from a high point at a collector region of the transmitter to a low point in the second layer.

16. (New) The transistor of claim 14, wherein a decrease in the concentration of germanium from the high point to the low point is substantially constant.

17. (New) The transistor of claim 11, wherein the trivalent substance comprises boron.

18. (New) The transistor of claim 11, wherein the pentavalent substance comprises arsenic having a concentration of between 1×10^{20} cm^{-3} and 1×10^{21} cm^{-3}.

19. (New) A transistor comprising:

a collector region;

an emitter region; and

a base layer between the collector region and the emitter region, the base layer comprising:

an intrinsic region between the collector and the emitter; and

an extrinsic region outside the intrinsic region;

wherein the intrinsic region and the extrinsic region comprise plural layers that are doped with different concentrations of a trivalent substance; and

wherein at least some of the plural layers in the intrinsic region are doped, from the emitter region, with a pentavalent substance.

20. The transistor of claim 19, wherein:

at least some of the plural layers in the intrinsic region are doped, from the collector region, with germanium;

a concentration of the germanium decreases from a high point at the collector region to a low point in one of the plural layers doped with the trivalent substance; and

a decrease in the concentration of germanium from the high point to the low point is substantially linear.